

REMARKS

The Applicants respectfully request reconsideration in view of the following remarks and amendments. Claims 55, 59, and 63 are amended. Accordingly, claims 54-65 are pending in the application.

I. Information Disclosure Statement

The information disclosure statement (IDS) submitted on August 2, 2007 was filed after the mailing date of the Office action of July 19, 2007. The IDS listed two references cited in a rejection from the Japanese Patent Office, as well as the Japanese rejection mailed May 11, 2007. The Examiner stated that the Applicants appear to have inadvertently selected an inappropriate statement from 37 CFR 1.97(e) because the August 2, 2007 IDS listed two references cited in a Japanese rejection, along with the Japanese rejection, and was submitted within three months of the rejection. The Examiner has assumed that the Applicants meant to make a statement under 37 CFR 1.97(e)(I) and requested the Applicants to explicitly make the appropriate statement in the next response. Further, if this is the case, then the fee should not have been paid. See 37 CFR 1.97(c)(I). Otherwise, a final rejection would have been received. See MPEP 609.04(b)II.A.2.

In response, the Applicants make the following statement according to 37 CFR 1.97(e)(I). It is hereby stated that each item of information contained in the information disclosure statement filed on August 2, 2007, was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement on August 2, 2007. The Applicants now believe that this statement is correct according to 37 CFR 1.97(e) and is consistent with what was submitted with the information disclosure statement filed on August 2, 2007 (i.e., the two references cited in a rejection from the Japanese Patent Office and the May 11, 2007 Japanese Office Action).

In addition, in light of the above statement, the Applicants also respectfully request that the previously paid \$180.00 fee be credited to Deposit Account 02-2666 because (as indicated by the Examiner in the Office Action) a fee was not required to be paid under 37 CFR 1.97(c)(I).

II. Claims Rejected Under 35 U.S.C. § 103

Claims 54-65 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Japanese application publication number 2001 -2751 19 by Itokawa ("Itowkawa") in view of Japanese application publication number 10-136352 by Matsushita Electric Ind. Co. Ltd. ("Matsushita") and further in view of U.S. Patent No. 7,050,640 issued to Acharya et al. ("Acharya"). The Applicants respectfully disagree with the Examiner's rejection for the following reasons.

Claim 54, among other limitations, recites the elements of "one of a plurality of sub-blocks in high-frequency sub-bands of each of one or more blocks into which each of frames of interlaced images forming a moving image is divided, the frames being hierarchically compressed and encoded into code stream data by performing discrete wavelet transform on pixel values of each of the blocks," "calculate an amount of codes of each of 1LH and 1HL components of the selected one of the sub-blocks and to calculate the ratio of the amount of codes of the 1LH component to the amount of codes of the 1HL component," "compare the calculated ratio with a threshold," and "estimate that motion in the selected one of the sub-blocks is high-speed if the calculated ratio is greater than the threshold and that the motion in the selected one of the sub-blocks is low-speed if the calculated ratio is less than or equal to the threshold."

According to the above recited limitations in claim 54, by adopting this configuration, it is possible to estimate (the amount of) motion on a *sub-block basis* (such as a code block basis) at high speed and with accuracy from the compressed and coded data of wavelet transform coefficients with respect to an interlaced image forming a moving image. In particular, by comparing the LH components of the first decomposition level (1LH) of the wavelet transform coefficients in which the horizontal edge of the image is strongly reflected, and the HL components of the first decomposition level (1LH) of the wavelet transform coefficients in which the vertical edge of the image is strongly reflected (i.e., comparing 1LH/1HL, with a threshold), it is possible to ensure estimation of the motion (speed) of the interlaced image on a *sub-block basis* (see e.g., page 143, line 20 to page 144, line 21 of the Specification).

Further, as recited in dependent claims 55, 59, and 63, as amended, a number of the sub-blocks in which the motion is estimated to be high-speed and a *total number of the sub-blocks* in

each of the frames are calculated, and a ratio of the number of the sub-blocks of the high-speed motion to *the total number of the sub-blocks* is calculated with respect to each of the frames, and the calculated ratio is compared with a threshold, and it is estimated that a motion in the corresponding frame is high-speed if the calculated ratio is greater than the threshold, and that the motion in the corresponding frame is low-speed if the calculated ratio is less than or equal to the threshold (see e.g., claims 55, 59 and 63 as amended). Support for the amendments of claims 55, 59 and 63 may be found on, for example, page 150, line 9 to page 153, line 3 of the draft English specification of the present application.

According to the above recited limitations of claims 54, 55, 59, and 63, by adopting this configuration, it is possible to estimate the (amount of) motion of the entire frame with accuracy and simplicity based on the motion estimated on a *sub-block basis*. In contrast, the technique described in Itokawa has the objective of efficiently and satisfactorily coding and decoding a moving image. In order to achieve this goal, an interlaced image forming a moving image is divided into sub-bands on a *frame basis* (e.g., frame by frame) and on a *field basis* (e.g., field by field), and the entropy of the high-frequency-side subbands (LH, SS, etc.) of each of field DWT and frame DWT is computed to compare the computed arithmetic values. Based on the result of the comparison, one field DWT and one frame DWT are selected instead of “one of a plurality of sub-blocks in high-frequency sub-bands,” as recited in claim 54 (and similarly recited in dependent claims 55, 59, and 63 as well).

Moreover, Matsushita fails to teach or suggest the above missing elements. In contrast, the technique described in Matsushita has an objective of effectively utilizing the band of each of multiple channels and providing high tolerance to transmission error in the case of dividing a video signal into sub-band signals of multiple frequency bands, compressing and coding the sub-band signals, and transmitting the sub-band signals through the multiple channels. In order to accomplish this goal, rate control is performed on a *channel-by-channel basis*, so that a change in quantization values is controlled with respect to the amount of coding of the lowest frequency band while with respect to the other frequency bands, a change in quantization values is controlled for the amount of coding and the coding is stopped in order from the lowest-priority frequency band, thereby controlling the amount of coding.

For example, Matsushita merely discloses at paragraphs [0066] and [0067]:

[0066] "In this embodiment, a description is given of the case where a video signal is divided into ten bands so that a sub-band signal of the lowest frequency band is transmitted through one channel and nine sub-band signals of high frequencies are transmitted through three channels."

[0067] "As described above, in this embodiment, in a digital video transmitter that divides a video signal into frequency bands, compresses and codes signals, and transmits the signals through multiple channels, the high-frequency signals of LEx, HLx, and HHx ($1 \leq x \leq n$) of the same level are multiplexed to be transmitted through each corresponding channel. Therefore, it is possible to efficiently perform rate control on each channel in the case of transmitting video where the amount of coding greatly varies among the LE, EL, and HH signals but the amount of data varies little among the levels. Examples of such video include video having many vertical lines, where the amount of coding of the LH signal is greater than the amount of coding of the HL signal or the HH signal."

Consequently, in light of at least the foregoing reasons, Matsushita fails to teach or suggest each element of claim 54.

Accordingly, in view of at least the preceding reasons, Itokawa in view of Matsushita fails to teach or suggest the above-described recited elements of claim 54. In addition, Acharya fails to teach or suggest the recited elements in claim 54. The Examiner has not cited and the Applicants are unable to discern the portion of Acharya that teaches or suggests the missing elements. As a result, Itokawa in view of Matsushita in further view of Acharya fails to teach or suggest each element of claim 54. In addition, dependent claims 55-57 are patentable over the cited art because each of these claims depends on claim 54. Accordingly, reconsideration and withdrawal of the rejection of claims 54-57 are respectfully requested.

With respect to independent claims 58 and 62, these claims recite analogous elements to those in claim 54. Thus, for at least the reasons mentioned in connection with claim 54, Itokawa in view of Matsushita in further view of Acharya fails to teach or suggest each element of claims 58 and 62. Further, dependent claims 59-61 and 63-65 are patentable over the art of record because each of these claims depends on either claim 58 or 62. Accordingly, reconsideration and withdrawal of the rejection of claims 58-65 are respectfully requested.

III. Response to Arguments

The Examiner stated on Page 6 of the Office Action in the Response to Arguments section: "If applicant has amended the claims in Japan to successfully overcome the prior art

cited in the Japanese rejection, providing this information would be helpful in expediting prosecution.” In response, the Applicants submit herein the requested information related to the prosecution of the corresponding Japanese application as follows. First, current claims 54-65, which were newly added in response to the previous Office Action dated July 19, 2007, correspond to the claims of the corresponding Japanese application amended in response to the first Office Action dated May 16, 2007, whose copy has been submitted to the USPTO along with copies of the cited references Itokawa and Matsushita. Therefore, current claims 54-65 have already been amended in view of Itokawa and Matsushita to overcome the prior art cited in the corresponding Japanese Office Action.

Further, in the corresponding Japanese application, in response to the first Office Action dated May 16, 2007, the Applicants made the above amendments along with the corresponding arguments. Thereafter, a final rejection was issued from the Japanese Patent Office, in which the Japanese Examiner only pointed out that the limitations of "to calculate a number of the sub-blocks in which the motion is estimated to be high-speed and a number of the sub-blocks in which the motion is estimated to be low-speed" and "to calculate a ratio of the number of the sub-blocks of the high-speed motion to the number of the sub-blocks of the low-speed motion" (recited in claims 55, 59 and 63 of the present application) are not disclosed in the specification. Since the Japanese Examiner raised no art rejections in the final Office Action, it is believed that the Japanese Examiner has been persuaded by the amendments and arguments made in view of Itokawa and Matsushita in response to the first Office Action.

In view of the above, in response to the § 103(a) rejection of claims 54-65 in the outstanding Office Action, the Applicants have provided similar arguments as made in response to the first Office Action issued in the corresponding Japanese application and also have amended claims 55, 59 and 63 to be consistent with the Japanese claims. As mentioned in the previous section, support for the amendments to claims 55, 59 and 63 may be found on, for example, page 150, line 9 to page 153, line 3 of the Specification. The arguments for the patentability of claims 54-65 have been provided in the previous section.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record, and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If the Examiner believes that a telephone conference would be useful in moving the application forward to allowance, the Examiner is encouraged to contact the undersigned at (408) 720-8300.

Respectfully submitted,

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